

What is claimed is:

1 1. An actuator latch device of a hard disk drive for locking an actuator to prevent
2 movement of the actuator, when a magnetic head installed on the actuator is parked in a parking area
3 of a hard disk, the actuator latch device comprising:

4 a locking protrusion provided on an end portion of the actuator opposite an end on which said
5 magnetic head is installed;

6 a stopping guard for restricting a pivot range of the actuator;

7 a latch lever allowed to pivot around an axis; and

8 a latch lever driving means for driving said latch lever, said latch lever being driven by said
9 latch lever driving means to a locking position to prevent the actuator from rotating when said
10 magnetic head is parked in said parking area by moving one end of the latch lever to a position for
11 interfering with the horizontal movement of said locking protrusion.

12 2. The device as claimed in claim 1, wherein the latch lever driving means is provided
1 with a coil wound around a second end of the latch lever.

2 3. The device as claimed in claim 1, wherein the latch lever driving means is provided
3 with an interference part attached to said one end of the latch lever, said interference part trapping
4 said locking protrusion against one of said hooking portions of said stopping guard when said
5 magnetic head is parked in said parking area.

6 4. The device as claimed in claim 2, wherein the latch lever driving means is provided

2 with an interference part attached to said one end of the latch lever, said interference part trapping
3 said locking protrusion against one of said hooking portions of said stopping guard when said
4 magnetic head is parked in said parking area.

1 5. The device as claimed in claim 3, wherein said interference part includes a step part
2 having an inclined surface over which said locking protrusion slides when said magnetic head is to
3 be parked in said parking area.

6. The device as claimed in claim 4, wherein said interference part includes a step part
having an inclined surface over which said locking protrusion slides when said magnetic head is to
be parked in said parking area.

7. The device as claimed in claim 2, wherein said actuator latch device further
comprises:

an upper yoke and a corresponding first magnet positioned above a bobbin of said actuator;
4 a lower yoke and a corresponding second magnet positioned below said bobbin, wherein said
5 lower yoke includes a first coupling portion for magnetically attracting said second end of the latch
6 lever when said magnetic head is to be parked in said parking area and said upper yoke includes a
7 second coupling portion for magnetically attracting said second end of the latch lever when said
8 magnetic head is to be positioned over a recording/reproducing area of said hard disk.

1 8. The device as claimed in claim 7, wherein said latch lever driving means provides
2 a first current to said coil when said latch lever is to be pivoted to said locking position for

3 preventing the rotation of said actuator, and provides a second current, opposite to said first current,
4 to said coil when said latch lever is to be pivoted to an unlocking position for enabling said actuator
5 to be rotated.

1 9. The device as claimed in claim 7, wherein the latch lever driving means is provided
2 with an interference part attached to said one end of the latch lever, said interference part trapping
3 said locking protrusion against one of said hooking portions of said stopping guard when said
4 magnetic head is parked in said parking area.

5 10. The device as claimed in claim 8, wherein the latch lever driving means is provided
6 with an interference part attached to said one end of the latch lever, said interference part trapping
7 said locking protrusion against one of said hooking portions of said stopping guard when said
8 magnetic head is parked in said parking area.

9 11. The device as claimed in claim 9, wherein said interference part includes a step part
10 having an inclined surface over which said locking protrusion slides when said magnetic head is to
11 be parked in said parking area.

1 12. The device as claimed in claim 10, wherein said interference part includes a step part
2 having an inclined surface over which said locking protrusion slides when said magnetic head is to
3 be parked in said parking area.

1 13. An actuator latch device of a hard disk drive for locking an actuator to prevent

2 movement of the actuator, when a magnetic head installed on the actuator is parked in a parking area
3 of a hard disk, the actuator latch device comprising:

4 a locking protrusion extending from a bobbin of said actuator;

5 a first stop for limiting pivotal movement of the actuator in a first direction, said first stop
6 coming into contact with said locking protrusion when said magnetic head is moved to said parking
7 position;

8 an upper yoke and a corresponding first magnet positioned above said bobbin;

9 a lower yoke and a corresponding second magnet positioned below said bobbin, wherein said
10 upper yoke includes a first extended coupling portion and said lower yoke includes a second
11 extended coupling portion;

12 a latch lever pivotally installed adjacent to said upper and lower yokes;

13 an interference part attached to a first end of said latch lever;

14 a coil wound around a second end of said latch lever; and

15 a power supply for driving said latch lever, wherein said second end of said latch lever is
16 magnetically attracted to said second extended coupling portion of said lower yoke when said power
17 supply provides a first current to said coil, and said second end of said latch lever is magnetically
18 attracted to said first extended coupling portion of said upper yoke when said power supply provides
19 a second current, opposite to said first current, to said coil.

1 14. The device as claimed in claim 13, wherein said interference part includes a step part
2 having an inclined surface over which said locking protrusion slides when said magnetic head is to
3 be parked in said parking area.

4 15. The device as claimed in claim 14, wherein said step part traps said locking
5 protrusion against said first stop when said magnetic head is parked in said parking area and releases
6 said locking protrusion when said actuator is enabled to position said magnetic head over a
7 recording/reproducing area of said hard disk.

1 16. The device as claimed in claim 15, further comprising:
2 a second stop for limiting the pivotal movement of the actuator in a second direction, by
3 limiting the movement of said locking protrusion as said actuator rotates in said second direction.

4 17. The device as claimed in claim 16, further comprising:
5 a stopping guard having a pivot shaft installed thereon, said latch lever being pivotally
6 installed on said pivot shaft and said first and second stops are hook shaped extensions extending
7 from opposite ends of said stopping guard.

8 18. An apparatus for locking an actuator arm of a hard disk drive having a release force
9 acting on said actuator arm to move said actuator arm from a parking position to a data position, said
10 actuator arm including a magnetic head attached thereto, said apparatus comprising:
11

12 an extruding member disposed on one end of said actuator arm opposite to said magnetic
13 head, said extruding member moving in a first direction when said actuator arm moves from said
parking position to said data position, and said extruding member moving in a second direction when
said actuator arm moves from said data position to said parking position; and

 a latch means configured to engage said extruding member, said latch means having a hold
position in which a movement of said extruding member is restricted in both said first and second

14 directions and a release position in which said movement of said extruding member is not restricted;
15 wherein said latch means moves from said hold position to said release position independent
16 of said release force.

17 19. The apparatus according to claim 18, wherein said latch means engages said extruding
18 member non-magnetically.

19 20. An apparatus for locking an actuator arm of a hard disk drive having a release force
20 acting on said actuator arm to move said actuator arm from a parking position to a data position, said
21 actuator arm including a magnetic head attached thereto, said apparatus comprising:

22 an extruding member disposed on one end of said actuator arm opposite said magnetic head;
23 and
24

25 a latch means having a hold position in which said latch means engages said extruding
26 member from at least two sides to restrict a movement of said extruding member and a release
27 position in which said movement of said extruding member is not restricted;

28 wherein said latch means moves from said hold position to said release position independent
of said release force.

29 21. The apparatus according to claim 20, wherein said latch means engages said extruding
30 member non-magnetically.